

REMARKS

Claims 1-13 and 24-25 are pending in this application. By this Amendment, claims 1, 2, 9 and 13 are amended and claims 14-23 and 27-31 are canceled. The amendments to claims 2, 9 and 13 are for form. Support for the amendments to claim 1 can be found, for example, in previously presented claim 8. No new matter is presented. Applicants respectfully request reconsideration and prompt allowance of the pending claims in view of at least the following remarks.

The Office Action rejects claims 1-5, 8 and 10-12 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. The rejection of claim 8 is moot because the claim is cancelled. Applicants amend claims 1 and 2 to remove the term "principally." Based on the above amendments, Applicants assert that claims 1-5 and 10-12 are definite and satisfy the requirements of §112, second paragraph. Applicants respectfully request withdrawal of the rejection.

The Office Action rejects claims 1, 4-7 and 10-12 under 35 U.S.C §102(b) over WO 89/00341 (Chauduri) and rejects claims 1, 4-7 and 10-12 under 35 U.S.C. §102(a) over HOT-WIRE CHEMICAL VAPOR DEPOSITION OF HIGH HYDROGEN CONTENT SILICON NITRIDE FOR SOLAR CELL PRESERVATION AND ANTI-REFLECTION COATING APPLICATIONS, Holt et al. (Holt). Applicants respectfully traverse the rejections.

Applicants amend claim 1 to include the subject matter previously recited in claim 8. Because claim 8 was not previously rejected over Chauduri or Holt, Chauduri and Holt fail to disclose all of the features recited in currently amended claim 1. Thus, claim 1 is allowable over Chauduri and Holt. Claims 4-7 and 10-12 are also allowable for at least the same reasons as claim 1, as well as for the additional features the claims recite. Applicants respectfully request withdrawal of the rejections.

The Office Action rejections claims 2, 3, 8, 9, 13 and 24-26 under 35 U.S.C. §103(a) over Chauduri in view of U.S. Patent Application Publication No. 2005/0016585 (Munzer). Because claim 1 is amended to include the subject matter of claim 8, Applicants respectfully traverse the rejection with respect to all pending claims.

Chauduri in view of Munzer fail to disclose and would not have rendered obvious, "a back-side insulating film being a silicon nitride film formed, so as to adjust the Si/N atomic ratio thereof to 0.80 to 1.80, both ends inclusive, by the catalytic CVD process," as recited in claim 1 and variously recited in claims 9 and 13.

The Office Action does not allege, nor do the references disclose or suggest, a catalytic CVD process for producing a back-side insulating film being a silicon nitride film. Rather, the Office Action alleges that the method of making the inorganic insulting film is not given patentable weight. Applicants respectfully traverse this assertion.

The Office Action alleges that the determination of the patentability of a product is based on the product itself and does not depend on its method of production. However, Applicants assert that the catalytic CVD process necessarily results in a solar cell with a different structural configuration than any product disclosed in the references. Importantly, the plasma CVD process normally used to produce solar cells causes damage to the substrate and creates dangling bonds in the film so that it is necessary to terminate the dangling bonds using a large amount of hydrogen. As a consequence, the obtained silicon nitride film contains hydrogen atoms to a maximum of 40% and has a degraded passivation effect under a sustained eradiation of light containing a large amount of ultraviolet radiation (Specification, pages 4 and 5).

As discussed on page 9 of the specification, in using the catalytic CVD process without plasmas for the film formation, there is no damage caused by the high-energy charged particles in the plasma as found in the plasma CVD process. The catalytic CVD process

allows deposition of an insulating film with a lower amount of interfacial defects while keeping the composition constant. The catalytic CVD process also creates a silicon-based insulating film with a high passivation effect. Thus, the insulating film can be deposited on a substrate and will have fewer interfacial defects.

Even if a product-by-process claim is not patentably defined by the process steps by which the product is made, the process of using the CVD process necessarily results in a product that is structurally different than the products disclosed in Chauduri and Munzer. The beneficial structural qualities of the solar cell in the current application is necessarily caused by the catalytic CVD process. Accordingly, Chauduri and Munzer fail to disclose and would not have rendered obvious all of the features and the subject matter recited in claims 1, 9 and 13 based on the claims at least variously reciting forming an insulating film by the catalytic CVD process and the references being silent regarding a CVD process. Thus, claims 1, 9 and 13 are allowable.

Claims 2-7, 10-12 and 24-26 are also allowable at least for the same reasons as claims 1 and 9, as well as for the additional features the claims recite. Applicants respectfully request withdrawal of the rejection.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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